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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,550	03/25/2004	Takahiro Yamada	03280093AA	4911
30743	7590	02/14/2006		
WHITHAM, CURTIS & CHRISTOFFERSON, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			EXAMINER GOLDBERG, BRIAN J	
			ART UNIT 2861	PAPER NUMBER

DATE MAILED: 02/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

11.2

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/808,550	YAMADA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Brian Goldberg	2861	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/14/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 4 and 14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not set forth detecting means to detect a charging state of the refresh ink droplet as stated in claims 4 and 14.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 4-8, 10-12, 14-18, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Schneider et al. (US 4638325).
5. Regarding claim 1, Schneider et al. disclose "a controller (50, 52, 54, 58, 60 of Fig 1) that controls the ejection member to eject a refresh ink droplet (24 of Fig 1); a collector that collects the refresh ink droplet (34, 36 of Fig 1); a reflection means for

reflecting the refresh ink droplet such that the reflected refresh ink droplet impinges on the collector (32, 40 of Fig 1); a detecting means for detecting an ejection condition of the ejection member based on the refresh ink droplet (36 of Fig 1, col 6 ln 54-59)."

6. Regarding claim 2, Schneider et al. disclose "the controller selectively controls the ejection member to eject a recording ink droplet at predetermined timings onto a recording medium, thereby forming a recording dot on the recording medium, and the controller controls the ejection member to eject the refresh ink droplet at a timing between the predetermined timings (col 4 ln 30-53)." The reference does not explicitly state that a dot is formed on a recording medium, but it is common in the art that "printing" as stated is done onto a recording medium.

7. Regarding claim 4, Schneider et al. disclose "the detecting means includes a detector that detects a charging state of the refresh ink droplet (col 6 ln 54-59, col 7 ln 28-42)."

8. Regarding claim 5, Schneider et al. disclose "the detector includes an induced current detecting electrode provided near a trajectory of the refresh ink droplet and a current detector that detects an electric current generated in the induced current detecting electrode (col 6 ln 54-59, col 7 ln 25-27)."

9. Regarding claim 6, Schneider et al. disclose "the detecting means includes an electric current detector that detects an electric current which flows through the collector when the refresh ink droplet impinges on the collector (col 6 ln 54-59)."

10. Regarding claim 7, Schneider et al. disclose "the detecting means includes a wetness detecting electrode disposed inside the collector and a detector that detects a

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clinging condition of the refresh ink droplet that clings on the wetness detecting electrode (col 7 ln 19-25)."

11. Regarding claim 8, Schneider et al. disclose "the detector detects the clinging condition by detecting change electric resistance between the wetness detecting electrode and the collector (col 7 ln 19-25)."

12. Regarding claim 10, Schneider et al. disclose "the collector and the deflection means are formed integral with each other (see 32, 34, 36 of Fig 1)."

13. Regarding claim 11, Schneider et al. disclose "an ejection member for ejecting a refresh ink droplet (20, 24); a controller (50, 52, 54, 58, 60 of Fig 1) that controls the ejection member to eject a refresh ink droplet (24 of Fig 1); a collector that collects the refresh ink droplet (34, 36 of Fig 1); a reflection means for reflecting the refresh ink droplet such that the reflected refresh ink droplet impinges on the collector (32, 40 of Fig 1); a detecting means for detecting an ejection condition of the ejection member based on the refresh ink droplet (36 of Fig 1, col 6 ln 54-59)."

14. Regarding claim 12, Schneider et al. disclose "the ejection member further ejects a recording ink droplet onto a recording medium, thereby forming a recording dot on the recording medium, and the controller selectively controls the ejection member to eject the recording ink droplet at predetermined timings and to eject the refresh ink droplet at a timing between the predetermined timings (col 4 ln 30-53)." The reference does not explicitly state that a dot is formed on a recording medium, but it is common in the art that "printing droplets," as stated in the reference, is done onto a recording medium.

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15. Regarding claim 14, Schneider et al. disclose "the detecting means includes a detector that detects a charging state of the refresh ink droplet (col 6 ln 54-59, col 7 ln 28-42)."

16. Regarding claim 15, Schneider et al. disclose "the detector includes an induced current detecting electrode provided near a trajectory of the refresh ink droplet and a current detector that detects an electric current generated in the induced current detecting electrode (col 6 ln 54-59, col 7 ln 25-27)."

17. Regarding claim 16, Schneider et al. disclose "the detecting means includes an electric current detector that detects an electric current which flows through the collector when the refresh ink droplet impinges on the collector (col 6 ln 54-59)."

18. Regarding claim 17, Schneider et al. disclose "the detecting means includes a wetness detecting electrode disposed inside the collector and a detector that detects a clinging condition of the refresh ink droplet that clings on the wetness detecting electrode (col 7 ln 19-25)."

19. Regarding claim 18, Schneider et al. disclose "the detector detects the clinging condition by detecting change electric resistance between the wetness detecting electrode and the collector (col 7 ln 19-25)."

20. Regarding claim 20, Schneider et al. disclose "the collector and the deflection means are formed integral with each other (see 32, 34, 36 of Fig 1)."

***Claim Rejections - 35 USC § 103***

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. Claims 3, 9, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. in view of Seachman et al. (US 4392142).

23. Regarding claim 3, Schneider et al. disclose the detecting means is provided common to a nozzle formed in the ejection member (20, 36, col 6 ln 54-59), and the controller controls the ejection member to eject the refresh ink droplet from the nozzle at different timings (col 4 ln 30-53). Thus Schneider et al. meets the claimed invention except providing a plurality of nozzles. Seachman et al. teach providing a plurality of nozzles (12 of Fig 1). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide a plurality of nozzles. One would have been motivated to so modify Schneider et al. by providing a plurality of nozzles for the benefit of ejecting ink at a higher rate thereby increasing the speed of printing.

24. Regarding claim 9, Schneider et al. disclose the claimed invention as set forth above with respect to claim 1. Thus Schneider et al. meet the claimed invention except the limitations set forth in claim 9. Seachman et al. teach "the detecting means includes an emitting member that emits a light flux that passes through a trajectory of the refresh ink droplet, a receiving member that receives the light flux emitted from the emitting

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member, and a detector that detects a shielding condition in which the light flux is shield by the refresh ink droplet that flies along the trajectory (col 5 ln 5-9, ln 22-24, ln 34-39, col 5 ln 66 – col 6 ln 4).” It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the detecting means be a light emitter and detector. One would have been motivated to so modify Schneider et al. for the benefit of providing several sensors to detect ink droplets and calibrate and control the emitting characteristics of the ink droplets, as stated by Seachman et al.

25. Regarding claim 13, Schneider et al. disclose the detecting means is provided common to a nozzle formed in the ejection member (20, 36, col 6 ln 54-59), and the controller controls the ejection member to eject the refresh ink droplet from the nozzle at different timings (col 4 ln 30-53). Thus Schneider et al. meets the claimed invention except providing a plurality of nozzles. Seachman et al. teach providing a plurality of nozzles (12 of Fig 1). It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to provide a plurality of nozzles. One would have been motivated to so modify Schnedier et al. by providing a plurality of nozzles for the benefit of ejecting ink at a higher rate thereby increasing the speed of printing.

26. Regarding claim 19, Schneider et al. disclose the claimed invention as set forth above with respect to claim 11. Thus Schneider et al. meet the claimed invention except the limitations set forth in claim 19. Seachman et al. teach “the detecting means includes an emitting member that emits a light flux that passes through a trajectory of the refresh ink droplet, a receiving member that receives the light flux emitted from the emitting member, and a detector that detects a shielding condition in which the light flux



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is shield by the refresh ink droplet that flies along the trajectory (col 5 ln 5-9, ln 22-24, ln 34-39, col 5 ln 66 – col 6 ln 4).” It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the detecting means be a light emitter and detector. One would have been motivated to so modify Schneider et al. for the benefit of providing several sensors to detect ink droplets and calibrate and control the emitting characteristics of the ink droplets, as stated by Seachman et al.

27. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. in view of *In re Harza*, 274 F.2d 669, 671, 124 USPQ 378, 380 (CCPA 1960).

28. Regarding claim 3, Schneider et al. disclose the detecting means is provided common to a nozzle formed in the ejection member (20, 36, col 6 ln 54-59), and the controller controls the ejection member to eject the refresh ink droplet from the nozzle at different timings (col 4 ln 30-53). Thus Schneider et al. meets the claimed invention except providing a plurality of nozzles. *In re Harza* teaches that it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to duplicate a part for a multiple effect (in this case a nozzle). One would have been motivated to so modify Schneider et al. by providing a plurality of nozzles for the benefit of ejecting ink at a higher rate thereby increasing the speed of printing.

29. Regarding claim 13, Schneider et al. disclose the ejection member is formed with a nozzle through which refresh ink droplets are ejected (20, 24); the detecting means is provided common to a nozzle formed in the ejection member (20, 36, col 6 ln 54-59); and the controller controls the ejection member to eject the refresh ink droplet from the

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nozzle at different timings (col 4 ln 30-53). Thus Schneider et al. meets the claimed invention except providing a plurality of nozzles. *In re Harza* discloses that It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to duplicate a part for a multiple effect (in this case a nozzle). One would have been motivated to so modify Schneider et al. by providing a plurality of nozzles for the benefit of ejecting ink at a higher rate thereby increasing the speed of printing.

30. Claims 9 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneider et al. in view of Houston (US 4990932).

31. Regarding claim 9, Schneider et al. disclose the claimed invention as set forth above with respect to claim 1. Thus Schneider et al. meet the claimed invention except the limitations set forth in claim 9. Houston teaches "the detecting means includes an emitting member that emits a light flux that passes through a trajectory of the refresh ink droplet, a receiving member that receives the light flux emitted from the emitting member, and a detector that detects a shielding condition in which the light flux is shield by the refresh ink droplet that flies along the trajectory (col 8 ln 14-32)." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the detecting means be a light emitter and detector. One would have been motivated to so modify Schneider et al. for the benefit of providing an optical sensor that is simple to fabricate and eliminates uncorrectable measurement errors, as stated by Houston.

32. Regarding claim 19, Schneider et al. disclose the claimed invention as set forth above with respect to claim 11. Thus Schneider et al. meet the claimed invention

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except the limitations set forth in claim 19. Houston teaches "the detecting means includes an emitting member that emits a light flux that passes through a trajectory of the refresh ink droplet, a receiving member that receives the light flux emitted from the emitting member, and a detector that detects a shielding condition in which the light flux is shield by the refresh ink droplet that flies along the trajectory (col 8 ln 14-32)." It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to have the detecting means be a light emitter and detector. One would have been motivated to so modify Schneider et al. for the benefit of providing an optical sensor that is simple to fabricate and eliminates uncorrectable measurement errors, as stated by Houston.

### ***Conclusion***

33. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Haskell (US 3898673) and Hill et al. (US 3769630) both discuss collecting and detecting reflected ink droplets and should be considered.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Goldberg whose telephone number is 571-272-2728. The examiner can normally be reached on Monday through Friday, 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Talbott can be reached on 571-272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BJG



February 1, 2006

**Thinh Nguyen**  
**Primary Examiner**  
**Technology Center 2800**

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BJG



February 1, 2006

**Thinh Nguyen**  
**Primary Examiner**  
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